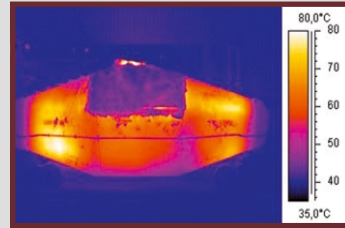
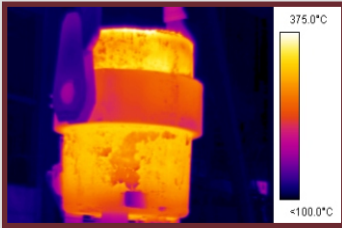


# Steel Ladle Monitoring

## *IrMonitor - Thermographic Monitoring Solutions*



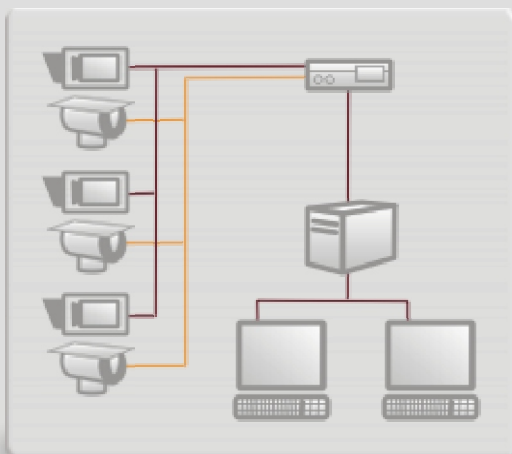
**In 2006, a failure in the fireproof lining of a foundry ladle led to a serious accident in a steel plant in Duisburg, Germany. In a matter of seconds, fluid steel with a temperature of 1500 °C spread all over the floor. All surrounding machines were completely damaged, and what is even worse, production was stopped for several months. Alone the repair costs of the damaged equipment rose to more than 10 million Euros.**

In order to be protected against such accidents, ArcelorMittal installed in its steel plant in Eisenhüttenstatt (Germany) a thermographic monitoring system from the company Automation Technology. The system called IrMonitor consists of six infrared cameras connected via fiber-optics with a Gigabit-Ethernet network and a 19" industrial computer. Special software running on this computer controls the cameras and other components of the system and evaluates continuously the temperature images recorded. The system automatically monitors the whole surface of the

foundry ladle, detecting weak spots in its fire-proof lining before they can turn into critical safety problems or the production process suffers an emergency cutout. The ceramic material used in the fireproof lining of casting ladles can stand extreme high temperatures. However, each time the fireproof layer gets in contact with fluid steel; it deteriorates getting thinner and thinner. This material is also very sensitive to shocks, which also increases its risk of being damaged.

IrMonitor is the perfect Foundry Ladle monitoring solution. The system raises an alarm immediately after the first signs of a weak spot are detected, reliably protecting personnel and production facilities against spills of fluid steel.

Additionally, IrMonitor helps to accurately determine the expected useful life of the fireproof lining of casting ladles, optimizing its use. If we consider that the renewal of the ceramic material of a ladle costs more than 30 thousand Euros, then we can conclude that the safe extension of its service life is a good business for steel plants.



Picture: Principle of a IrMonitor system